

Texas Commission On Environmental Quality

INTEROFFICE MEMORANDUM

To: Earl Jones, P.E.
Mechanical /Agriculture /Combustion /Coatings
Section

Date: February 10, 2004

Thru: Dom Ruggeri, P.E., Team Leader
Air Dispersion Modeling Team (ADMT)

From: Ray Pettit
ADMT

Subject: Modeling Report - GAF Materials Corporation

1.0 Project Identification Information.

Permit Application Number: 7711A
Regulated Entity Number: 100788959
Customer Reference Number: 600474753
Nearest City, County: Dallas, Dallas County

Modeling Detail: Submitted by Trinity Consultants (dated 01/06/2003) and yourself. The locations of the emission sources, building structures and property line were determined from information provided on the plot-plan.

2.0 Modeling Summary: As requested, the ADMT conducted preliminary State Property Line and State NAAQS particulate modeling from certain existing emission sources at the GAF Materials plant. The results are summarized on Tables 1 through 3 below. The results show exceedances over the 1-hour/3-hour PM and 24-hour/Annual PM₁₀ standards occur. Please note, the highest concentrations for each pollutant and averaging period occur along or within about 25 meters of the property line. Therefore, you informed me the company will need to perform site-wide PM, PM₁₀ and Effects Review modeling with the appropriate source emission rates and parameters to demonstrate compliance with the appropriate standards.

Table 1. Site-wide State Property Line Analysis Results			
Pollutant	Averaging Time	GLCmax (µg/m ³)	Standard (µg/m ³)
PM	1-hr	919	400
	3-hr	568	200

Table 2. Total Highest State NAAQS Concentrations (Concentrations > De Minimis)					
Pollutant	Averaging	GLC max	Background	Total Conc. =	Standard

PM ₁₀	24-hr	234	120	354	150
	Annual	50.1	40	90.1	50

3.0 Land Use. Inspection of the USGS map and DOQQ's shows the surrounding land use is predominantly rural. Therefore, this option was selected in the modeling. Although the map shows increasing terrain heights southwest of the plant, the height changes occur at least a couple hundred meters away from the property line where the highest predicted concentrations occur. Therefore, the elevated terrain option was not selected in this case.

4.0 Modeling Emissions Inventory.

4.1 Source Characterizations. The emission rates and source parameters entered in the modeling are listed on the following tables based on the "Modeling Stack Parameters Permit" table information you provided. As discussed, you informed me that the PM and PM₁₀ emission rates are the same values in this case.

Table 5 - List of Emission Rates (lb./hour)			
EPN	PM/PM ₁₀	EPN	PM/PM ₁₀
25	5.46	1-4	0.59
26A	0.15	1-5	0.59
26B	0.29	1-6	0.59
27	0.09	34	3.2
1-1	0.23	COOL 3	6.0
1-3	0.03	COOL 1	4.0

Table 6 - List of Source Parameters						
	Easting (meters)	Northing (meters)	Stack Height (feet)	Stack Temperature (F)	Exit Velocity (feet/sec.)	Exit Diameter (feet)
25	700157	3628334	58	68	65	3.82
26A	700182	3628343	36	68		

					59	0.68
26B	700189	3628343	36	68	59	1.0
27	700164	3628347	116	68	35	1.47
1-1	700122	3628412	50	68	92	0.83
1-3	700127	3628382	55	200	92	0.83
1-4	700088	3628374	40	68	123	2.5
1-5	700092	3628374	40	68	92	2.5
1-6	700094	3628373	40	68	123	2.5
34	700128	3628369	35	68	53	3.11
COOL 3	700097	3628381	43	68	36	5.08
COOL 1	700110	3628408	43	68	36	5.08

4.2 Operating Scenario. The analysis is based on continuous 24-hour emissions occurring throughout the meteorological year.

5.0 Building Wake Effects (Downwash). EPA's BPIP and BPIP-PRIME programs were used to determine the appropriate building downwash parameters for the modeled sources. The structure heights and locations are identified on the "GAF Materials Corporation - Dallas Facility" plot plan provided.

6.0 Meteorological Data.
Surface station / ID: Dallas-Ft. Worth / 3927
Upper Air Station / ID: Stephenville / 13901
Meteorological Dataset: 1-year 1988 Meteorological Data
Anemometer Height: 6.7 meters

7.0 Receptor Grid. A Cartesian receptor network was used in the modeling runs. The grids consist of 25-meter spacing around the property line extending out about 200 meters, and 100-meter spacing extending out approximately 1000 to 1100 meters in all directions. The receptor network is adequate for determining locations of the highest predicted concentrations.

8.0 Model Used and Modeling Techniques: The ISCST3 (version 02035) and ISC3-PRIME (version 01228) models were used in this case to include evaluations at those off-property receptors that fall within building cavity zones.